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Term: 369/$.CCLS. AND L22

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L22	VERIFY$ SAME OLD SAME NEW	479	L22
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L19	EXAMIN$ ADJ4 (DISK OR DISC OR MEDIUM OR SECTOR OR SECTORS) SAME DEFECT$	117	L19
L18	(SCRATCH$ OR FINGER$ OR SMUGE OR SMUGE OR DUST) SAME (DEFECT$ OR ERROR) SAME (DISK OR DISC OR MEDIUM)	5349	L18
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L3	(CHECK$ OR EXAMINING OR VERIFY$) ADJ3 (OLD OR PREVIOUS) ADJ (DATA OR INFORMATION) SAME NEW	52	L3
L2	369/$.CCLS. AND L1	170	L2
L1	(OLD OR PREVIOUS) ADJ2 (DATA OR INFORMATION) SAME (NEW) ADJ (DATA OR INFORMATION) SAME (RE-RECORD$ OR OVERWRIT$ OR OVER-WRIT$)	760	L1

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L6: Entry 18 of 20 File: USPT May 23, 1989

DOCUMENT-IDENTIFIER: US 4833665 A
** See image for Certificate of Correction **
TITLE: Information recording control system reusing a defective area

Brief Summary Text (7):
Recently, a erasable optical disk has been developed and writing of information into the optical disk and updating thereof are attainable. However, if a defect block is detected when the information is recorded, the information to be written into that defective block is written into an alternative block. The defect block is created by a permanent defect of the block as well as temporary defect in which recording is not correctly done, e.g., by deposition of dust. A percentage of the latter block detect is relatively high. In the optical disk, the defect block can be detected by reading data after it has been written in order to check whether the data has been correctly written. Even if it is a temporary defect due to the deposition of dust, it is detected as an error in recording in the same manner as the permanent defect. Once a block is detected to be defective, the data is recorded in an alternative region and no data is subsequently written into the defect area. As a result, the number of blocks in the alternative area increases, and a block which has been temporarily determined to be defective but can now correctly record the data is not used. Thus, the number of blocks in the alternative area increases monotonously every time the data is written.

Current US Original Classification (1):
369/53.17

Current US Cross Reference Classification (3):
369/53.36

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L13: Entry 18 of 25 File: USPT Dec 12, 1995

DOCUMENT-IDENTIFIER: US 5475665 A
TITLE: Optical information writing and reading apparatus having two light sources

Detailed Description Text (9):
In this manner, according to the invention, in regardless of the moving direction of the optical card with respect to the optical head, it is possible to reproduce a pit information immediately after the relevant pit is written by the reading light beam. Therefore, the verifying operation can be performed in the both moving directions of the optical card immediately after the pit has been recorded, so that the effective recording speed can be increased. Moreover, the condition of the information track 20 can be monitored immediately before the writing. That is to say, when the optical card 57 is moved in the first direction a, the condition of the information track 20 can be monitored by the output signal produced by the fourth light receiving element 94, and when the optical card is moved in the second direction b, the condition of the optical card can be checked by the output signal from the first light receiving element 91. As the result of this checking, when the relevant information track is detected to be already used or dusts or damages are existent on the information track, the writing operation may be stopped or may be carried out for another normal track which is not used.

Current US Original Classification (1):
369/44.38

Current US Cross Reference Classification (1):
369/44.14

Current US Cross Reference Classification (2):
369/44.42

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card 1 passes through the ¼ wavelength plate 30 and the polarizing beam splitter 10, and then is focused on the photosensor 66 by the sensor lens 65. In the photosensor 66, there are three photosensing units 67, 68 and 69 each of which converts variations of the amount of light of each beam into variations of electrical characteristics. The outputs from the photosensing units are sent to the corresponding preamplifiers 70, 71 and 72, respectively, and from which they are sent to the switching circuit 73 after a predetermined processing.

Next, the operations after the switching circuit 73 will be explained with reference to FIGS. 3 and 4 together. FIG. 4 is a diagram showing the arrangement of light spots on information tracks on the optical card. In FIG. 4, information tracks 51*a*, 51*b*, - - - , 51*f* on which information is to be recorded are provided parallel to the direction A of the reciprocating movement of the optical card. As explained in connection with FIG. 3, the three spots 62, 63 and 64 are located on the same information track 51*b*. That is, the direction of alignment of the three spots is a line parallel to the direction of the information track. Now, consider a case in which information is recorded as a pit 55 on the information track 51*b*. The intensities of the three spots 62, 63 and 64 formed by the diffraction grating 61 are different. At least, the intensity of the central spot 62 is larger than those of the adjacent spots 63 and 64. The command of recording and the content of recording from the computer 78 are transmitted via the interface 77 and the encoder 19 to the laser driver 20, and drive the laser 8 by predetermined modulating recording signals. In accordance with the modulating recording signals, the recording of information is performed on the information track 51*b* by the spot 62. The spot 64 reads the written information immediately after recording. The output from the photo-sensing unit 69 and the preamplifier 72 corresponding to the spot 64 is transmitted from the switching circuit 73 to the decoder 16 and reproduction immediately after recording is performed. The reproduced information is transmitted to the interface 77. In the interface 77, a comparison between the reproduced information and the information originally to be recorded is performed. When it is judged that the recording has not been performed normally, a command is issued, for example, to record again on the adjacent information track 51*c*.

Further, the spot 64 for confirmation itself is also modulated by the recording information. Hence, it is possible to obtain correct information by transmitting the recording modulating information from the interface 77 to the preamplifiers 70, 71 and 72 by a command (not illustrated), and collating and correcting the information within the preamplifier 72.

Now, the role of the spot 63 in recording on the information track 51*b* will be explained. The spot 63 monitors the state of the information track 51*b* immediately before recording by the spot 62. When some kind of foreign matter or defect is present, such presence appears as variations of the amount of light arriving at the photo-sensing unit 68. Signals from the photo-sensing unit 68 are transmitted via the preamplifier 71 and the switching circuit 73 to the control circuit 74. Within the control circuit 74, the magnitude, continuing time interval or the like of the output from the switching circuit are investigated. When it is judged that the result is not acceptable, commands are issued to the auto-focusing servo 14 and the auto-tracking servo 15 so as to hold the state of each of those two servos. The time width of holding may be until it is confirmed by the signals from the preamplifier 71 that the spot 63 has passed over the foreign matter and the signal has returned to a predetermined level, or until a predetermined time interval has passed. Thus, it is possible to promptly relocate the spots 62, 63 and 64 on the information track 51*b*. It is communicated from the control circuit 74 to the interface 77 that foreign matter having a large adverse influence is present on the information track 51*b*, and the above-described control has been performed. According to this signal, the interface 77 sends commands to each unit that the information is to be recorded again on the information track 51*c*, or on an information track separated from track 51*b* by one or plural tracks, if the defect is larger than the width of a single information track.

Next, a case in which information is recorded on the information track 51*c* in FIG. 4 will be explained. In recording on the information track 51*b* described above, information is recorded from left to right (hereinafter provisionally termed "forward movement") in FIG. 4. Recording on the adjacent track 51*c* is performed, however, from right to left (that is, recording is performed during backward movement) in FIG. 4 for the purpose of increasing the recording speed. In the relative reciprocating relationship between the optical head 3 and the optical card 1 at normal reproduction (for example, in FIG. 4, an apparatus which reads information always from left to right for reproduction), it is also possible, for example, to record while reversing the alignment of the information covering one track at recording. In recording on the information track 51*c*, the functions of the spots 63 and 64 are reversed, and confirmation immediately after recording is performed by the spot 63. That is, the interface 77 judges whether the direction of movement of the optical card 1 is the forward direction or the backward direction, and transmits the information, to the switching circuit 73. According to the information, the switching circuit 73 transmits signals from the preamplifier 72 during forward movement, and signals from the preamplifier 71 during backward movement, to the decoder 16 after recording for the above-described purpose of immediate confirmation.

Further, the role of the spot 64 in recording on the information track 51*c* will be explained. The spot 64 monitors the state of the information track 51*c* immediately before recording by the spot 62. When some kind of foreign matter or defect 56 is present, such presence appears as variations in the amount of light arriving at the photo-sensing unit 69. Signals from the photo-sensing unit 69 are transmitted via the preamplifier 72 and the switching circuit 73 to the control circuit 74. Within the control circuit 74, the magnitude, continuing time interval or the like of the output from the switching circuit are investigated. When it is judged that the result is not acceptable, commands are issued to the auto-focusing servo 14 and the auto-tracking servo 15 to hold the state of each of the two servos. The time width of holding may be, for example, until it is confirmed by the signals from the preamplifier 72 that the spot 64 has passed over the foreign matter 56 and the signal has returned to a predetermined level, or until a predetermined time interval has passed. Thus, it is possible to promptly relocate the spots 62, 63 and 64 on the information track 51*c*. It is communicated from the control circuit 74 to the interface 77 that a foreign matter having a large adverse influence is present on the informa-

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L6: Entry 9 of 20 File: USPT Aug 15, 1995

DOCUMENT-IDENTIFIER: US 5442613 A
TITLE: Optical information recording/reproduction apparatus to stop recording operation upon detecting error in access operation to target track

Brief Summary Text (17):
An object of the present invention is to provide an optical information recording/reproducing apparatus to stop recording operation upon detecting an error in access operation to a target track, by which when a trouble due to a defect, dust or the like is detected on or near a target track, data can be prevented from being recorded on the track on which the trouble has been detected, to avoid the disablement of reading of the recorded data.

Brief Summary Text (18):
Another object of the present invention is to provide an optical information recording/reproducing apparatus to stop recording operation upon detecting an error in access operation to a target track, by which even when a trouble due to a defect, dust or the like is detected on or near a target track, data can be stably recorded with high reliability.

Brief Summary Text (19):
Still another object of the present invention is to provide an optical information recording/reproducing apparatus to stop recording operation upon detecting an error in access operation to a target track, by which even in the case of a recording medium that a trouble due to a defect, dust or the like is detected on or near a target track, the position of such a trouble on the recording medium can be recognized to stably record data with high reliability.

Current US Original Classification (1):
369/53.16

Current US Cross Reference Classification (1):
369/44.32

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